

CLAIMS

1 1. A pressure sensor device for producing a signal indicative
2 of a pressure of a fluid to be monitored, comprising:

3 a housing having a fluid conduit for receiving the fluid to be
4 monitored;

5 a diaphragm positioned at an end of the fluid conduit and
6 including at least first and second portions, wherein a thickness of
7 the first portion is less than a thickness of the second portion; and

8 a transducer bonded to a surface of the first portion of the
9 diaphragm and including piezoresistive elements, said transducer
10 including electronics for sending and processing said signal.

1 2. The device of claim 1, wherein said transducer is a MEMS
2 pressure transducer.

1 3. The device of claim 2, wherein said diaphragm is a stainless
2 steel diaphragm and said MEMS pressure transducer is mounted to
3 said diaphragm by a high temperature bonding process.

1 4. The device of claim 1, wherein said housing is cylindrical.

1 5. The device of claim 1, wherein said second portion is circular
2 and said first portion is annular around the outer edge of said second
3 portion.

1 6. The device of claim 1, wherein said housing is tubular and said
2 first end includes an annular shoulder for mounting said diaphragm
3 thereon.

1 7. The device of claim 6, which further includes an annular groove
2 on the outer surface of the first portion and connecting said first
3 portion to said annular shoulder, whereby groove isolates said
4 diaphragm from stress from said housing.

1 8. A pressure sensor device for producing a signal indicative
2 of a pressure of a fluid to be monitored, comprising:

3 a housing having a fluid conduit means for receiving the fluid to
4 be monitored;

5 diaphragm means for responding to said pressure and
6 positioned at an end of the fluid conduit means and including at least
7 first and second portions, wherein a thickness of the first portion is
8 less than a thickness of the second portion; and

9 transducer means including electronics for sending and
10 processing said signal. said transducer means being bonded to a
11 surface of the first portion of the diaphragm means and including
12 piezoresistive elements.

1 9. The device of claim 8, wherein said transducer means is a
2 MEMS pressure transducer.

1 10. The device of claim 9, wherein said diaphragm means is a
2 stainless steel diaphragm and said MEMS pressure transducer is
3 mounted to said diaphragm by a high temperature bonding process.

1 11. The device of claim 8, wherein said housing is cylindrical.

1 12. The device of claim 8, wherein said second portion is circular
2 and said first portion is annular around the outer edge of said second
3 portion.

1 13. The device of claim 8, wherein said housing is tubular and said
2 first end includes an annular shoulder for mounting said diaphragm
3 means thereon.

1 14. The device of claim 13, which further includes an annular
2 groove on the outer surface of the first portion and connecting said
3 first portion to said annular shoulder, whereby groove isolates said
4 diaphragm means from stress from said housing.

1 15. In a pressure sensor device for producing a signal indicative of a
2 pressure of a fluid to be monitored, including a housing having a fluid
3 conduit for receiving the fluid to be monitored and a transducer
4 including piezoresistive elements, said transducer including
5 electronics for sending and processing said signal, the improvement
6 comprising:

7 a diaphragm positioned at an end of the fluid conduit and
8 including at least first and second portions, wherein a thickness of
9 the first portion is less than a thickness of the second portion; and
10 said transducer being bonded to a surface of the first portion of
11 said diaphragm.

1 16. The device of claim 15, wherein said transducer means is a
2 MEMS pressure transducer said diaphragm is a stainless steel
3 diaphragm, said MEMS pressure transducer being mounted to said
4 diaphragm by a high temperature bonding process.

1 17. The device of claim 15, wherein said housing is cylindrical.

1 18. The device of claim 15, wherein said second portion is circular
2 and said first portion is annular around the outer edge of said second
3 portion.

1 19. The device of claim 15, wherein said housing is tubular and said
2 first end includes an annular shoulder for mounting said diaphragm
3 means thereon.

1 20. The device of claim 19, which further includes an annular
2 groove on the outer surface of the first portion and connecting said
3 first portion to said annular shoulder, whereby groove isolates said
4 diaphragm means from stress from said housing.